DOCUMENTED CHROMOSOME NUMBERS 1992: 2. MISCELLANEOUS U.S.A. AND MEXICAN SPECIES, MOSTLY ASTERACEAE

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ABSTRACT

Chromosome numbers of 26 species of flowering plants from the U.S.A. and Mexico are reported: 21 species of Asteraceae, representing 18 genera; and one species each of the families Acanthaceae (*Ruellia corzoi*), Cochlospermaceae (*Amoreuxia wrightii*), Lobeliaceae (*Lobelia cardinalis*), and Passifloraceae (*Passiflora tenuiloba*). The count for *Amoreuxia wrightii* ($2n = 12$) is a first report for the genus. Significant counts among the Asteraceae include *Chaetymenia peduncularis* ($2n = 18$) and *Wedelia mexicana* ($2n = 24$), the former being a first report for the genus.

The following meiotic chromosome counts (Table 1) are documented by specimens deposited at the University of Texas, Austin (TEX). Previously uncounted taxa are represented by an asterisk (*). A double asterisk (**) indicates a new number for the species.

METHODS

Chromosome counts were made from bud material collected in the field and fixed in a modified Carnoy's solution (4:3:1; chloroform, absolute ethanol, glacial acetic acid), using standard squash procedures. All counts were made by the junior author, most of these checked by the senior author.

DISCUSSION

Previous counts for the small family Cochlospermaceae have been reported only for the relatively large genus *Cochlospermum* in which eight species have been counted, six of these being diploids, triploids, tetraploids and hexaploids on a base of $x=12$ (Fedorov 1969; Gill et al. 1979; Krishnan 1977; Maglio 1984; Morawetz 1986). The seemingly triploid counts of $n=18$ pairs reported for two species strongly suggest that the ancestral base chromosome number for the family is $x=6$. Our count of *Amourexia wrightii* ($2n=12$, or $x=6$) also supports this hypothesis.

The present report of $n=9$ for *Solidago juliae* agrees with previous counts (Nesom 1989), although the collection represents a new county record for its geographic distribution. All previous counts of *S. altissima* (=*S. canadensis* var. *scabra* [Muhl.] Torr. & Gray) have been hexaploid ($n=27$); the tetraploid level

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TABLE 1. Chromosome numbers.

Family/Species	Voucher[1]	Chromosome number (2^n)
ACANTHACEAE		
**Ruellia corzoi* Tharp & Barkley	U.S.A. TEXAS: *T 16026*	34
ASTERACEAE		
Ageratum corymbosum Zucc.	MEX. JALISCO: *S 2663*	40
Alloispermum scabrum (Lag.) H. Rob. var. *scabrum*	MEX. JALISCO: *S 2653*	32
Brickellia grandiflora (Hook.) Nutt.	U.S.A. NEW MEX.: *T 16010*	18
Chaenactis douglasii Hook. & Arn.	U.S.A. COLORADO: *T 16000*	12
**Chaetymenia peduncularis* Hook. & Arn.	MEX. NAYARIT: *M 1054*	18
Dyssodia acerosa DC.	U.S.A. TEXAS: *T 16024*	24 & 1-2 frag.
Dyssodia pentachaeta (DC.) B.L. Rob.	U.S.A. TEXAS: *T 16023*	16
Gaillardia aristata Pursh	U.S.A. COLORADO: *T 15995*	68
**Gnaphalium chartaceum* Greenm.	MEX. GUERRERO: *M 1017*	28
Grindelia squarrosa (Pursh) Dunal. var. *serrulata* (Rydb.) Steyerm.	U.S.A. COLORADO: *T 15996*	12
Heterotheca fulcrata (Greene) Shinners	U.S.A. TEXAS: *MT 2*	18
Hydropectis aquatica (S. Wats.) Rydb.	MEX. DURANGO: *S 2790*	18
Jefea brevifolia (A. Gray) Strother	MEX. DURANGO: *M 1100*	28
Jefea pringlei (Greenm.) Strother	MEX. PUEBLA: *M 899*	28
**Psacalium amplifolium* (DC.) H. Rob. & Brett.	MEX. GUERRERO: *M 1023*	60
***Psilostrophe tagetinae* (Nutt.) Greene	U.S.A. NEW MEX.: *J 188A*	32, 64
Solidago juliae Nesom	U.S.A. TEXAS: *T 16012*	18
Solidago altissima L.	U.S.A. TEXAS: *N 7260, N 7263*	36
Solidago sempervirens L.	U.S.A. TEXAS: *N 7255*	36
Thelesperma simplicifolia A. Gray	U.S.A. TEXAS: *T s.n.*	20
Trichocoronis rivularis A. Gray	U.S.A. TEXAS: *T 15955*	60
**Wedelia mexicana* (Sch. Bip.) McVaugh	MEX. SINALOA: *M 1061*	24
COCHLOSPERMACEAE		
**Amoreuxia wrightii* A. Gray	U.S.A. TEXAS: *MT 1*	12
LOBELIACEAE		
Lobelia cardinalis L.	U.S.A. TEXAS: *T 16014*	14
PASSIFLORACEAE		
***Passiflora tenuiloba* Engelm.	U.S.A. TEXAS: *T 16016*	24

[1]Letters before collection numbers pertain to the following collectors: J (Alice Jack); M (Mark Mayfield); MT (Matt Turner); N (Guy Nesom); S (Jacqui Soule); T (B. Turner).

(n=18) first reported here, from two localities in the near-coastal region of Texas (*N 7260* Brazoria Co. and *N 7263* Washington Co.), suggests that perhaps these plants represent a distinct evolutionary unit. They have been referred to as *S. altissima* var. *pluricephala* M.C. Johnston (see Nesom 1989 for a summary and details regarding variation in *S. altissima* in Texas).

Chaetymenia peduncularis (n=9) when originally described was said to belong to the tribe Tageteae, or perhaps the tribe Helenieae, near *Burrielia*. Rydberg (1914),

following most earlier treatments, positioned *Chaetymenia* in the subtribe Jaumeinae of the Helenieae, where it was said to relate to *Jaumea*. Indeed, McVaugh (1984) positioned the species in the latter genus, but noted that "The tribal relationships of *Jaumea* are not fully understood." He further notes that *Chaetymenia peduncularis* "may sometimes be keyed out with the genera of tribe Tageteae, because of the minute translucent glands in the leaves." Strother (1977) however, excluded the genus from his concept of the Tageteae. Turner and Powell (1977) positioned *Chaetymenia* within their concept of the tribe Coreopsideae, as did Stuessy (1977). Robinson (1981) did not account for *Chaetymenia*, but presumably would position it in the subtribe Jaumeinae, near, if not within, *Jaumea*.

Because of the above controversy, the chromosome count of *Chaetymenia* might bear upon the phyletic position of the taxon. Genera on a base of $x=9$ are relatively rare in the various tribes and/or subtribes to which *Chaetymenia* has been assigned. Within the Tageteae, only the monotypic aquatic genus *Hydropectis* has a base of $x=9$ (Keil and Stuessy 1977). Within the Coreopsideae numbers on a base of $x=9$ are also rare, but occur in the genera *Coreopsis* and *Thelesperma*, although most workers would consider these to be derived numbers in the genera concerned. The subtribe Juameinae (sensu Robinson 1981), however, has a base number of $x=19$. Overall, the chromosome number of *Chaetymenia* suggests that the genus is a rather remote element in the Helenieae, perhaps basal to the subtribes Varillinae and Clappiinae of Robinson (1981), both with base numbers of $x=18$, presumably derived from an ancestral base number of $x=9$.

The chromosome counts of $n=16$ pairs and $n=32$ pairs for *Psilostrophe tagetina* (*J188*A,B) were obtained from two plants growing at the same location, one presumably diploid, the other tetraploid. Tetraploids in *Psilostrophe* have previously been reported only in *P. mexicana* R. Brown. Indeed, the count was largely responsible for the cognition of *P. mexicana* (Brown 1977). Turner et al. (1988) reduced the latter to varietal rank in the widespread highly variable *P. gnaphalodes*. A broader survey of chromosome numbers among taxa of *Psilostrophe* is almost certain to reveal additional tetraploids.

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